

26. An optical recording/reproducing apparatus for recording, reproducing or erasing an information signal onto/from any one of N types (where $N \geq 2$) of optical discs having first layers of different thicknesses, each type of said optical discs having at least said first layer and a second layer, by converging a light flux onto said second layer through said first layer, said apparatus comprising:

at least two light emitting means each for emitting said light flux, said at least two light emitting means being arranged on a common substrate; and

a converging means comprising different numerical apertures for converging the light flux on said second layer of said discs,

wherein said converging means converges said light flux as a spot with a smaller diameter D and performs aberration correction at said spot by employing a larger one of said numerical apertures, with respect to one of said optical discs having a thinner one of said first layers, and

wherein a thickness of each of said first layers of said N type of optical discs is about 1.2mm or less.

28. An optical recording/reproducing system comprising;

(a) an optical recording/reproducing apparatus for recording, reproducing or erasing an information signal onto/from

any one of N types (where $N \geq 2$) of optical discs having first layers of different thicknesses, each type of said optical discs having at least said first layer being transparent and a second layer for storing information, by converging a light flux onto said second layer through said first layer, said apparatus comprising;

at least two light emitting means each for emitting said light flux, said at least two light emitting means being arranged on a common substrate; and

a converging means comprising different numerical apertures for converging the light flux on said second layer of said discs,

wherein said converging means converges said light flux as a spot with a smaller diameter and performs aberration correction at said spot by employing a larger one of said numerical apertures, with respect to one of said optical discs having a thinner one of said first layers, and

wherein a thickness of each of said first layers of said N type of optical discs is about 1.2mm or less;

(b) a signal processing means, responsive to one of (i) a reproduction signal, corresponding to said information signal, from said photo detecting means and (ii) receipt of recording data, corresponding to said information signal, for recording on said disk, for generating an output signal corresponding to said

information signal for performing one of a reproducing operation and a recording operation; and

(c) a system controlling means coupled to said signal processing means for controlling generation of the output signal of said signal processing means.

29. An optical recording/reproducing apparatus as in claim 26, wherein each of said first layers is a transparent substrate.

30. An optical recording/reproducing system as in claim 28, wherein each of said first layers is a transparent substrate.

31. An optical recording/reproducing apparatus for recording, reproducing or erasing an information signal onto/from any one of N types (where $N \geq 2$) of optical discs having first layers of different thicknesses, each type of said optical discs having at least said first layer and a second layer, by converging a light flux onto said second layer through said first layer, said apparatus comprising:

at least two light emitting means each for emitting said light flux, said at least two light emitting means being arranged on a common substrate; and

a converging optical system including a first converging means comprising a first numerical aperture and a second converging means comprising a second numerical aperture, said converging optical system for converging, by employing one of said first converging means and said second converging means, a

light flux on said second layer of one of said N types of optical discs, said first numerical aperture and said second numerical aperture being different from each other,

wherein said one of said first converging means and said second converging means employed by said converging optical system converges said light flux as a spot with a smaller diameter D and performs aberration correction at said spot, by employing a larger one of said numerical apertures, with respect to one of said optical discs having a thinner one of said first layers, and

wherein a thickness of each of said first layers of said N type of optical discs is about 1.2 mm or less.

32. An optical recording/reproducing apparatus as in claim 31, wherein each of said first layers comprises a transparent substrate.

33. An optical recording/reproducing system comprising;
(a) an optical recording/reproducing apparatus for recording, reproducing or erasing an information signal onto/from any one of N types (where $N \geq 2$) of optical discs having first layers of different thicknesses, each type of said optical discs having at least said first layer and a second layer, by converging a light flux onto said second layer through said first layer, said apparatus comprising:

at least two light emitting means each for emitting said light flux, said at least two light emitting means being arranged on a common substrate; and

a converging optical system including a first converging means comprising a first numerical aperture and a second converging means comprising a second numerical aperture, said converging optic system for converging, by employing one of said first converging means and said second converging means, a light flux on said second layer of one of said N types of optical discs, said first numerical aperture and said second numerical aperture being different from each other,

wherein said one of said first converging means and said second converging means employed by said converging optical system converges said light flux as a spot with a smaller diameter D and performs aberration correction at said spot, by employing a larger one of said numerical apertures, with respect to one of said optical discs having a thinner one of said first layers, and

wherein a thickness of each of said first layers of said N type of optical discs is about 1.2 mm or less;

(b) a signal processing means, responsive to one of (i) a reproduction signal, corresponding to said information signal, from said photo detecting means and (ii) receipt of recording data, corresponding to said information signal, for recording on

said disk, for generating an output signal corresponding to said information signal for performing one of a reproducing operation and a recording operation; and

(c) a system controlling means coupled to said signal processing means for controlling generation of the output signal of said signal processing means.

34. An optical recording/reproducing system as in claim 33, wherein each of said first layers comprises a transparent substrate.

35. A system comprising:

(a) an optical recording/reproducing apparatus for recording, reproducing or erasing an information signal onto/from any one of N types (where $N \geq 2$) of optical discs having first layers of different thicknesses, each type of said optical discs having at least said first layer being transparent and a second layer for storing information, by converging a light flux onto said second layer through said first layer, said apparatus comprising:

at least two light emitting means each for emitting said light flux, said at least two light emitting means being arranged on a common substrate; and

a converging means comprising different numerical apertures for converging the light flux on said second layer of said discs,